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 The Japan Terylene Co Ltd. *NL-7112489-Q.

**PIGMENT DISPERSIONS - MADE BY POLYMERISING
COPOLYMERISABLE MONOMERS WITH DYE AND
STABILISER...**

Full Priority: 22-12-70; 23-8-71; (4)/JA 115351; 64177;
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NEW

Finely divided pigment dispersions are made by polymerising copolymerisable unsatd. monomers (I) in an org. liquid which dissolves the monomers but not the polymer, in the presence of a stabiliser which is compatible with or chemically bonded to the copolymer and which contains a long hydrocarbon group so that the product can be dispersed in low polar or non polar org. liquids, to give a dispersion with a particle size of 0.1-5 μ . The dispersion is coloured with a dye, pref. a water soluble dye or a dye complex contg. a material with an electrical charge opposite to that of the dye.

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USE/ADVANTAGES

Products are stable pigment dispersions useful for colouring plastics such as PVC and printing inks, esp. for the prodn. of fluorescent colours. Dispersion have excellent light stability.

DETAILS

Dispersing agent may be non-polar aliphatic or aromatic hydrocarbons such as mineral spirit, kerosine, petroleum naphtha, hexane, cyclohexane, etc. The stabiliser may be cpds. with an ester grp. and a more than 6C alkyl, such as hexyl acrylate, dihexyl fumarate, dioctylitaconate, etc. or polymers of these; polyvinyl esters, liquid polybutadiene; urethane-treated oils. The unsatd. monomers (I) may may be (A) those with low affinity for dyes such as n-propyl(meth)acrylate, styrene, (B) copolymerisable monomers with 1 or 2 CN grps. such as vinylidene cyanide, with high affinity to dyes; or (C) monomers with a functional grp. having high affinity for dyes, such as methallyl sulphonic acid, (meth) acrylic acid, vinyl pyridine, diacetoneacrylamide, etc. (basic grps.). The heat and chemical resistance of the copolymer can be improved by the

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inclusion of monomer (I) such as diallyl phthalate, divinyl benzene, pentaerythritol tetramethacrylate, etc. Preferred copolymers contain 95/5 to 20/80 A:B, 99/1 to 70/30 A:C, or 90-20/80-5/30-1 A:B:C, opt. with 0.1-5 wt.% D (on A+B+C). Generally the dispersion contains 15-80 wt.% (esp. 25-60 wt.%) A+B+C. Polyman. is initiated with e.g. benzoyl peroxide, AZBN. A wide range of dyes may be used, e.g. amino grp. -contg. dyes with cationic properties in dil acid soln. water sol. dyes contg. sulphonic acid or carboxylic acid grp.; water sol. dyes which are absorbed directly into fibres, water (in)soluble clear fluorescent dyes and dyes contg. no water-soluble grp., and which are soluble in oils and fats, hydrocarbons and molar solvents, mainly of the azo type but also some anthraquinone-, nigrosine- and azine types. The dyes are used at 0.3-25 wt.% on copolymerisable monomers. Dye complexes can be made, esp. by using anionic surface active agents with cationic dyes and brightening agents, or a cationic surface active agent with acid dyes and anionic fluorescent brightening agents. 1-15% of a HCl/HO contg. polycondensate which is sol. in monomers of type II but not in the org. liquid, may be added to improve the solubility and dispersibility of the pigment dispersions. The light resistance of the products can be increased by adding antioxidants such

as 2,6-di-tert. butyl 4-methylphenol and UV absorbers such as phenyl salicylate. Polyman. is carried out at 50-120°C (60-90°C) for 3-20 hrs. (8-12 hrs.).

EXAMPLE

A soin. of 459 pts. mineral spirit, 200 pts. soya bean oil modified alkyd resin (oil length 70), 3.5 pts. "Aizene Catilon Orange RH" and 2.0 pts. benzoyl peroxide was stirred at 80°C and a mixture of 200 pts. methyl acrylate and 150 pts. acrylonitrile added, over 4 hrs. Polyman. was continued for 6 hrs. to give an orange pigment dispersion.

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